Requirements Specification

for

VGM Audit Storage Device

Version 1.0.5

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State of Montana Gambling Control Division

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Table of Contents

Revision History

Name	Date	Reason For Changes	Version
Ben Williams	2/6/09	Remove current meter file and formatting changes.	1.0.5
Ben Williams	1/28/09	Add more details for validation of ASD data by VGM.	1.0.4
Ben Williams	1/21/09	Specify RSA key size to be 768 bits. Add clarification to some requirements. Add $$CR meter. Add time of creation to file names. Add requirement to prevent VGM operation if VGMID is not set. Add flash drive test appendix.	1.0.3
Ben Williams	12/23/08	Add requirement for inserting new ASD in VGM and other minor corrections	1.0.2
Ben Williams	12/18/08	Add file system and minimum time to keep files	1.0.1
Ben Williams	12/16/08	Initial Revision	1.0

1. Introduction

1.1 Purpose

The purpose of this document is to define the requirements specifications for VGM Audit Storage Device. The ASD is intended to replace the carbon copy produced by impact printers with digital storage devices for recording audit ticket and ticket voucher data. The ASD has many advantages over impact printers including speed, size, and availability. Use of ASD will help minimize regulatory costs, simplify the reporting of VGM revenue data, lessen administrative and recordkeeping burdens for machine owners/operators, and enhance the management tools available to the industry and State of Montana.

1.2 Intended Audience

The intended audience for this requirements speciation document is new and existing VGM manufactures who wish to license their equipment in the State of Montana.

1.3 References

Daylight Savings: http://aa.usno.navy.mil/faq/docs/daylight_time.php

FAT File System: http://www.microsoft.com/whdc/system/platform/firmware/fatgen.mspx

Newline Guidelines: http://www.unicode.org/versions/Unicode4.0.0/ch05.pdf (see paragraph 5.8)

RSA Cryptography: http://www.ietf.org/rfc/rfc3447.txt

SHA-1: http://www.ietf.org/rfc/rfc3174.txt

SSH Public Key File Format: http://www.ietf.org/rfc/rfc4716.txt

1.4 RSA Key Pair Generation

The public and private RSA key generation shall occur using the ssh-keygen utility. All keys will be in the SSH protocol version 1 file format (generated using "-t rsa1" option) and be 768 bits in size (using "-b 768" option). A comment of the manufacture name the key pair is assigned to will also be created via the "-C" option during key generation.

2. Specification Requirements

2.1 Device Requirements

This section is used to specify the requirements the ASD device.

REQ-HW1: An ASD shall be a removable, portable, non-volatile, electronic memory storage device. The intent is to allow an owner/operator to remove the ASD from the VGM and read, store, or forward the ASD data from their PC.

REQ-HW2: An ASD shall be a device that is compatible with a standard port on a personal computer. An example of an acceptable ASD device would be a thumb flash drive that plugs into the USB port on a PC.

REQ-HW3: An ASD shall have a minimum storage capacity of 1,990,000,000 bytes 1.85GB. The purpose of requiring non-standard minimum capacity is due to the variance of available storage across different manufactures of USB flash devices.

REQ-HW4: An ASD shall allow multiple read and write operations throughout its lifetime.

REQ-HW5: An ASD shall use the FAT32 file system.

2.2 Data File Requirements

This section is used to specify the requirements for the data that is stored on the ASD device.

REQ-DATA1: All ASD data files shall be in the format of tab delimited flat file and have a txt file extension (i.e. *.txt).

REQ-DATA2: All ASD data files shall use an ASCII CR+LF for specifying a newline. The ASCII hexadecimal values for CR followed by LF are 0x0D followed by 0x0A. This newline convention will allow the data files to be usable on most operating systems.

REQ-DATA3: No records in ASD data files shall use the tab character except for delimiting between fields.

REQ-DATA4: All ASD data files shall have a read-only attribute. This requirement is to prevent accidental corruption of the files when viewing or archiving ASD data on a PC by the owner or operator of the VGM.

REQ-DATA5: An ASD shall contain a read-only readme.txt file at the root of the device with the contents contained in Appendix C of this document. The purpose of this file is to inform owners and operators of the contents on the ASD and to give them warning to not delete or modify any files.

REQ-DATA6: All ASD data files file shall exist on the ASD for a minimum of one year from the time they were created. Files older than one year may be deleted by the VGM to conserve free storage space. The deletion of data older than one year shall not require input from the operator.

REQ-DATA7: Records shall be appended to the end of any existing ASD data files with the same filename when the date on the VGM is moved backwards in time past the current date. The scenario where an audit log file contains multiple "Day Start" or "Day End" records may exist and is acceptable. It is also acceptable for a game data file to be appended to in the event the two records occur at the same date and time.

2.2.1 **Audit Log Files**

REQ-DATA-LOG1: An audit log file shall have the all lowercase filename log_{VGMID}_{YYYYMMDD}_{HHMMSS[ds]}.txt where {VGMID} is the video gambling machine identification number assigned to the machine, {YYYYMMDD} is the year, month and day in numeric format, and {HHMMSS[ds]} is the time of file creation in 24 hour format 2 digit hour, minutes, seconds ending with "d" for daylight savings time or "s" for standard time.

REQ-DATA-LOG2: All audit log files shall reside on the ASD in the directory named "audit_logs" under the root.

REQ-DATA-LOG3: An audit log file record shall contain data for the fields:

Name	Description	Align	Size	Padding	Format
Reason	Event reason	Left	20	Spaces	Alpha Numeric – See REQ-DATA-LOG4 for valid reasons
Date	Date of record	Right	10	Zeros	2 digit numeric month, day, and 4 digit year separated by "/".
Time	Time of record in 24 hour format	Right	9	Zeros	24 hour format 2 digit hour, minutes, seconds separated by ":" and ending with "D" for daylight savings time or "S" for standard time
Ticket#	Cash ticket sequential number	Right	8	Spaces	Numeric
Ticket$	Cash ticket amount	Right	11	Spaces	Numeric dollars and cents separated with a period
$$IN	Lifetime amount in	Right	11	Spaces	Numeric dollars and cents separated with a period
$$PL	Lifetime amount played	Right	11	Spaces	Numeric dollars and cents separated with a period
$$WN	Lifetime amount won	Right	11	Spaces	Numeric dollars and cents separated with a period
$$PD	Lifetime amount paid	Right	11	Spaces	Numeric dollars and cents separated with a period
$$CR	Credit available for play	Right	11	Spaces	Numeric dollars and cents separated with a period
Games PL	Lifetime games played	Right	8	Spaces	Numeric
Games WN	Lifetime games won	Right	8	Spaces	Numeric
Name	Name of licensed establishment	Left	20	Spaces	Alpha Numeric
Location	Name of city, town, or county	Left	20	Spaces	Alpha Numeric

VGMID	VGM identification decal number	Right	6	Spaces	Numeric
PGM#	Program name and revision	Right	6	Spaces	Alpha Numeric
Serial	Machine serial number	Left	20	Spaces	Alpha Numeric

REQ-DATA-LOG4: An audit log reason record shall be one of the following:

Reason	Description
Day Start	Start of day for logging (00:00:00)
Day End	End of day for logging (23:59:59)
Cash Ticket	Cash ticket printed
New Software	New software loaded on machine
Before Memory Clear	Machine data before lifetime memory clear
After Memory Clear	Machine data after lifetime memory clear
Cash Accessed	Cash area accessed
Logic Accessed	Logic area accessed
Before Jackpot Alter	Machine data before jackpot was changed
After Jackpot Alter	Machine data after jackpot is changed
Manual Request	Manual request after audit key usage

REQ-DATA-LOG5: An audit log file shall contain the field record names in REQ-DATA-LOG3 as the first line of the file in the order specified top to bottom in the table and the second line containing "-" characters numbering the amount in the size specification for each field. See Appendix D of this document for a sample.

REQ-DATA-LOG6: A new audit log file shall be created at 00:00:00 every day unless the VGM is powered off. A new audit log shall be created and "Day Start" record shall be recorded if the VGM is powered on and no audit log file yet exists for the current day.

REQ-DATA-LOG7: A new audit log file record shall be created any time one of the events in REQ-DATA-LOG4 occurs on the VGM.

REQ-DATA-LOG8: An audit log file record with reason of "Cash Ticket" shall contain data for all fields.

REQ-DATA-LOG9: An audit log file record with any reason except "Cash Ticket" shall contain data for all fields except "Ticket$" and "Ticket#" which shall contain only spaces.

REQ-DATA-LOG10: An audit log file shall contain at minimum, records with a "Day Start" and a "Day End" reason. The "Day Start" shall occur at 00:00:00 and the "Day End" shall occur at 023:59:59. In the event the VGM is powered off during these times the "Day End" record may be missing and the "Day Start" record shall be recorded when the VGM is later powered on (See REQ-DATA-LOG6).

2.2.2 **Progressive Log Files**

REQ-DATA-PROGRESSIVE1: A progressive log file shall have the all lowercase filename progressive_{VGMID}_{YYYYMMDD}_{HHMMSS[ds]}.txt where {VGMID} is the video gambling machine identification number assigned to the machine, {YYYYMMDD} is the year,

month and day in numeric format, and {HHMMSS[ds]} is the time of file creation in 24 hour format 2 digit hour, minutes, seconds ending with "d" for daylight savings time or "s" for standard time.

REQ-DATA-PROGRESSIVE2: All progressive log files shall reside on the ASD in the directory named "progressive_logs" under the root.

REQ-DATA-PROGRESSIVE3: A progressive log file record shall contain data for the fields:

Name	Description	Align	Size	Padding	Format
Date	Date of record	Right	10	Zeros	2 digit numeric month, day, and 4 digit year separated by "/".
Time	Time of record in 24 hour format	Right	9	Zeros	24 hour format 2 digit hour, minutes, seconds separated by ":" and ending with "D" for daylight savings time or "S" for standard time
Game Name	Name of game	Left	20	Spaces	Alpha Numeric
Type	Game type	Left	5	Spaces	Must be "Poker", "Keno", or "Bingo"
Denom$	Game denomination	Right	11	Spaces	Numeric dollars and cents separated with a period. This is the bet increment if the game does not support denominations.
Progressive Name	Name of progressive	Left	20	Spaces	Alpha Numeric. Do not use "x/x" where x is numeric.
Amount$	Amount of progressive jackpot won	Right	11	Spaces	Numeric dollars and cents separated with a period
Before $$JP	Jackpot amount before win	Right	11	Spaces	Numeric dollars and cents separated with a period
After $$JP	Jackpot amount after win	Right	11	Spaces	Numeric dollars and cents separated with a period
Before $$ES	Escrow amount before win	Right	11	Spaces	Numeric dollars and cents separated with a period
After $$ES	Escrow amount after win	Right	11	Spaces	Numeric dollars and cents separated with a period
$$PD	Lifetime jackpot amount paid	Right	11	Spaces	Numeric dollars and cents separated with a period
$$BS	Base jackpot amount	Right	11	Spaces	Numeric dollars and cents separated with a period
$$MX	Maximum jackpot amount	Right	11	Spaces	Numeric dollars and cents separated with a period

REQ-DATA-PROGRESSIVE4: A progressive log file shall contain the field record names in REQ-DATA-PROGRESSIVE3 as the first line of the file in the order specified top to bottom in the table and the second line containing "-" characters numbering the amount in the size specification for each field. See Appendix D of this document for a sample.

REQ-DATA-PROGRESSIVE5: A new progressive log file record shall be created when a progressive jackpot is won.

REQ-DATA-PROGRESSIVE6: A progressive log file record shall contain data for all fields.

REQ-DATA-PROGRESSIVE7: A new progressive log file shall be created at 00:00:00 every day unless the VGM is powered off. A new progressive log file shall be created if the VGM is powered on and no progressive log file yet exists for the current day.

REQ-DATA-PROGRESSIVE8: A progressive log file shall exist for everyday even if no progressive jackpots are won.

2.2.3 **Games Data Files**

REQ-DATA-GAMES1: A games data file shall have the all lowercase filename games_{VGMID}_{YYYYMMDD}_{HHMMSS[ds]}_{REASON}.txt where {VGMID} is the video gambling machine identification number assigned to the machine, {YYYYMMDD} is the year, month and day in numeric format, {HHMMSS[ds]} is the time of file creation in 24 hour format 2 digit hour, minutes, seconds ending with "d" for daylight savings time or "s" for standard time, and {REASON} is the lowercase reason that caused the file to be created with all spaces replaced by underscores (i.e. "Before Memory Clear" would be "before_memory_clear").

REQ-DATA-GAMES2: All games data files shall reside on the ASD in the directory named "games_data" under the root.

REQ-DATA-GAMES3: A games data file record shall contain data for the fields:

Name	Description	Align	Size	Padding	Format
Game Name	Name of game	Left	20	Spaces	Alpha Numeric
Type	Game type	Left	5	Spaces	Must be "Poker", "Keno", "Bingo", or "Bonus"
Denom$	Game denomination	Right	11	Spaces	Numeric dollars and cents separated with a period. This is the bet increment if the game does not support denominations.
$$PL	Lifetime amount played	Right	11	Spaces	Numeric dollars and cents separated with a period
$$WN	Lifetime amount won	Right	11	Spaces	Numeric dollars and cents separated with a period
Progressive Name	Name of progressive	Left	20	Spaces	Alpha Numeric. Do not use "x/x" where x is numeric.
$$JP	Jackpot amount	Right	11	Spaces	Numeric dollars and cents separated with a period
$$ES	Jackpot escrow amount	Right	11	Spaces	Numeric dollars and cents separated with a period
$$PD	Lifetime jackpot amount paid	Right	11	Spaces	Numeric dollars and cents separated with a period
$$BS	Base jackpot amount	Right	11	Spaces	Numeric dollars and cents separated with a period
$$MX	Maximum jackpot amount	Right	11	Spaces	Numeric dollars and cents separated with a period

REQ-DATA-GAMES4: A games data file shall contain the field record names in REQ-DATA-GAMES3 as the first line of the file in the order specified top to bottom in the table and the second line containing "-" characters numbering the amount in the size specification for each field. See Appendix D of this document for a sample.

REQ-DATA-GAMES5: A new games data file record shall be created when a new record is added to the audit log file. The VGMID, date, time, and reason from the event in the audit log file are used in the games data file name specified in REQ-DATA-GAMES1**.** The games data file shall contain all combinations of game names, denominations, and progressive jackpots and their associated meters each as one record.

REQ-DATA-GAMES6: A games data file record with a type of Keno, Poker, or Bingo shall contain data for all fields except Progressive Name, $$JP, $$ES, $$PD, $$BS, and $$MX which are populated only if the game supports progressive jackpots. If a game does not support progressive jackpots the fields Progressive Name, $$JP, $$ES, $$PD, $$BS, and $$MX shall only contain spaces.

REQ-DATA-GAMES7: A games data file record with a type of Bonus shall contain data for all fields except Denom$, $$PL, Progressive Name, $$JP, $$ES, $$PD, $$BS, and $$MX which shall only contain spaces.

2.3 Security Requirements

This section is used to specify the security requirements of the ASD device to ensure the validity of the data it holds.

REQ-SECURITY1: All VGM manufactures shall be assigned a unique RSA public key supplied in the SSH protocol version 1 file format. The corresponding RSA private key will not be given and remain secret.

REQ-SECURITY2: All ASD files shall contain a signature as the last 96 bytes in the file with nothing following including any carriage returns or newlines.

REQ-SECURITY3: The signature shall be a SHA-1 hash of the file contents (excluding any existing signature) that is encrypted with the manufactures RSA public key and will be 96 bytes in size.

REQ-SECURITY4: The signature shall be calculated and recorded anytime a data file is created or modified.

2.4 VGM Requirements

This section is used to specify the requirements of the VGM that contains ASD device.

REQ-VGM1: The VGM shall be able to display any data file contained on the ASD from the operators menu or audit key in its raw and unmodified form. The file signature may be omitted from this view.

REQ-VGM2: The VGM shall halt and suspend game play immediately if the ASD cannot be detected or is inoperable, the ASD has less than 1 MB free, the ASD has unexpected files, directories, or contains files from a VGM with a different VGMID. VGMs may require their own specific files for security purposes and those files would be considered expected.

REQ-VGM5: The VGM shall verify the data written to the ASD is correct after every write operation otherwise the VGM shall halt and suspend game play if a problem is detected.

REQ-VGM6: The VGM shall allow only one ASD device to be used at one time.

REQ-VGM7: The ASD data shall not be cleared during a Lifetime Memory Clear operation.

REQ-VGM8: The ASD shall remain in a locked area within the VGM.

REQ-VGM9: The VGM shall require user confirmation from the operator menu if support for removing or inserting an ASD is allowed at runtime.

REQ-VGM10: The VGM shall halt and suspend game play if the VGMID is not set. Scenarios of the VGMID not being set could be due to the VGM being new, logic board replacement, memory error/machine crash, or manual deletion from the operators menu.

REQ-VGM11: The VGM shall analyze and verify the integrity of all files on the ASD when it is powered on and when a new ASD is inserted. Memory clear operations shall have no adverse affect on the ability to verify the integrity of ASD files. The VGM shall halt and suspend game play if the integrity of any file is broken. The preferred algorithm to verify ASD file integrity is to calculate the SHA1 hash for each file's data excluding the existing signature and encrypt the hash outcome with the RSA public key which should be equal to the existing signature in the file.

Appendix A: Glossary

ASCII (American Standard Code for Information Interchange) - set of 128 alphanumeric and special control characters.

Audit Storage Device (ASD) – removable, portable, non-volatile, electronic, memory storage device used to store electronic records of audit tapes.

FAT (File Allocation Table) File System - computer file system architecture that is supported by virtually all existing operating systems.

Flat File - electronic record that is stripped of all specific application (program) formats. This allows the data elements to be migrated into other applications for manipulation.

Gigabyte (GB) - amount of memory equal to 1024 Megabytes (1,073,741,824 bytes) of memory.

Megabyte (MB) – amount of memory equal to 1024 Kilobytes (1,048,576 bytes) of memory.

Personal Computer (PC) - a microcomputer designed for use by a single user.

RSA Cryptography - a public-key cryptosystem in which public and secret keys are derived from the factors of very large numbers. It is an asymmetric form of encryption using a private key to lock the data and a public key to unlock it.

SHA-1 - message-digest algorithm, which takes an input message of any length < 2^64 bits and produces a 160-bit output as the message digest.

SSH (Secure SHell) - a system for secure, encrypted connections between two computers over a network. SSH uses one open and one secret key.

Tab – ASCII character with hexadecimal value of 0x09.

Video Gambling Machine (VGM) – video poker, video keno, or video bingo machine as defined in 23-5-112, MCA, and including a multi-game machine as defined in 23-5-621 MCA.

Appendix B: USB Flash Drive Durability Testing

Concerns over the durability and usable lifespan of USB flash (thumb) drives prompted the following testing. The flash memory used in these devices is known to have a limited lifespan and can only survive a fixed number of writes. SLC flash is supposed to have a life span of 100,000 writes and MLC flash should have a lifespan of 10,000 writes (http://www.getusb.info/what-is-the-life-cycle-of-a-usb-flash-drive/). An ASD device may receive thousands of writes per day and must be able to record an entire years worth of data per requirements.

The only prior lifespan testing of flash drives found via the web was here: http://www.bress.net/blog/archives/114-How-Long-Does-a-Flash-Drive-Last.html. The author of this test found that 1GB Sony USB flash drive was able to survive 90.5 million writes before it stopped functioning. The author suspected the drive utilized a wear leveling algorithm to prolong its usable lifespan. More info on wear leveling can be found in this white paper by Corsair memory: http://www.corsairmemory.com/_faq/FAQ_flash_drive_wear_leveling.pdf. Most flash drive manufactures do not disclose if their products utilize wear leveling but research showed that many flash controllers support this feature.

The testing done at the Montana Gambling Control Technical Lab was performed using three PNY Attaché 2GB USB flash drives. These flash drives were priced in the bottom tier of what was available locally. All tests were performed on a PC running Windows XP and with buffering disabled for the drive. The following three test scenarios were executed.

1. Continually write 1KB of random data to one file on an empty flash drive and then read the file to verify the contents using a Perl script. Each write operation will overwrite the previous operation keeping the size of the file always at 1KB.
2. Continually write 1KB of random data to one file on a full flash drive and then read the file to verify the contents using a Perl script. Each write operation will overwrite the previous operation keeping the size of the file always at 1KB. The flash drive was filled with a large random data file (created with dd) leaving no free space.
3. Continually write and read the entire 2GB flash drive using the flash drive tester from Virtual Console (http://www.vconsole.com/client/?page=page&id=13).

The results of our testing are below:

Test	Successful Test Cycles
1 KB File on Empty Drive	30.2 Million
1 KB File on Full Drive	30.9 Million
Write Entire 2GB Drive	5205

Additionally, three more 2GB USB flash drives were purchased from different manufactures locally. These drives where filled with random data until only 1MB of free space was left and then the same test writing to a 1KB file was executed. This scenario was meant to simulate actual ASD usage fulfilling the free space requirements in this document. The results are located in the table below.

Flash Drive Model	Successful Test Cycles
Staples Relay	16.2 Million
SanDisk Cruzer Micro	23.9 Million
Sony Microvault	16.7 Million

At time of writing this document we have been unable to break any USB flash drives and the successful test cycles are still counting. In conclusion, our testing has shown that 2GB USB flash drives available today are robust enough to meet our requirements for use as an ASD.

Appendix C: readme.txt

```
WARNING: Do not modify or delete anything on this device!  Doing so
will render the data invalid and you may be subject to penalty.

The contents of this device contain important audit data from a
Video Gambling Machine.  This data may need to be reported to the
State of Montana for tax purposes.  Please see http://xxx for
further information.

The files contained on this device can be opened for reading with
any text editor (such as Microsoft Word) or workbook program (such
as Microsoft Excel).  The data is tab delimited and organized into
rows and columns.

Meters can be balanced on a machine using the formula:
($$IN + $$WN) - $$PL = $$PD + $$CR

All files contain a signature at the end of the file that may not
be readable and is used for verification purposes.

The contents of this device are described below:
audit_logs – Contains log files for events with meter data that
             have occurred on the video gambling machine.  The
             file names have the format log_{VGMID}_{YYYYMMDD}.txt
             where {VGMID} is the video gambling machine
             identification number assigned to the machine and
             {YYYYMMDD} is the year, month and day in numeric
             format. These files may be used for audit purposes.
games_data – Contains game performance data files that are created
             for every event that has occurred on the video
             gambling machine.  The file names have the format
             games_{VGMID}_{YYYYMMDD}_{HHMMSS}_{REASON}.txt where
             {VGMID} is the video gambling machine identification
             number assigned to the machine, {YYYYMMDD} is the
             year, month and day in numeric format, {HHMMSS} is the
             hour, minutes, and seconds, and {REASON} is reason
             that caused the file to be created. These files may be
             used for audit purposes.
progressive_logs – Contains log files for progressive jackpot wins
                   with meter data. The file names have the format
                   progressive_{VGMID}_{YYYYMMDD}.txt where {VGMID}
                   is the video gambling machine identification
                   number assigned to the machine and {YYYYMMDD} is
                   the year, month and day in numeric format. These
                   files may be used for audit purposes.
readme.txt – this file.

The columns of data have the following meaning:
$$BS - Base jackpot amount
$$CR – Credit available for play
$$ES – Jackpot escrow amount
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$$IN - Lifetime amount in
$$JP - Jackpot amount
$$MX - Maximum jackpot amount
$$PD - Lifetime amount paid
$$PL - Lifetime amount played
$$WN - Lifetime amount won
After $$ES - Escrow amount after win
After $$JP - Jackpot amount after win
Amount$ - Amount of progressive jackpot won
Before $$ES - Escrow amount before win
Before $$JP - Jackpot amount before win
Date - Date of record
Denom$ - Game denomination (bet increment if no denomination)
Game Name - Name of game
Games PL - Lifetime games played
Games WN - Lifetime games won
Location - Name of city, town, or county
Name - Name of licensed establishment
PGM# - Program name and revision
Progressive Name - Name of progressive
Reason - Event reason
Serial - Machine serial number
Ticket# - Cash ticket sequential number
Ticket$ - Cash ticket amount
Time - Time of record in 24 hour format
Type - Game type
VGMID - VGM identification decal number

The events recorded in audit_log files have the following meaning:
After Jackpot Alter - Machine data after jackpot change
After Memory Clear - Machine data after lifetime memory clear
Before Jackpot Alter - Machine data before jackpot change
Before Memory Clear - Machine data before lifetime memory clear
Cash Accessed - Cash area accessed
Cash Ticket - Cash ticket printed
Day Start - Start of day for logging (00:00:00)
Day End - End of day for logging (23:59:59)
Logic Accessed - Logic area accessed
Manual Request - Manual request after audit key usage
New Software - New software loaded on machine

Appendix D: Sample Data Files

log_470092_20080120_000000s.txt

Reason	Date	Time	Ticket#	Ticket$	$$IN	$$PL	$$WN	$$PD	$$CR	Games PL	Games WN	Name	Location	VGMID	PGM#	Serial
Day Start	01/20/2008	00:00:00S			94658.71	89604.70	85742.87	85626.14	0.00	644561	26083	Bob's Bar	Helena	470092	705352	700073242186
Before Jackpot Alter	01/20/2008	00:06:31S			95431.76	90092.30	85841.26	85742.45	0.00	644582	26098	Bob's Bar	Helena	470092	705352	700073242186
After Jackpot Alter	01/20/2008	00:06:31S			95431.76	90092.30	85841.26	85742.45	0.00	644582	26098	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	00:12:13S	4924621	220.40	95717.91	90239.59	86335.33	86231.86	0.00	644597	26105	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	00:22:52S	4924622	227.86	96498.67	90810.39	86977.86	86595.85	0.00	644672	26119	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	00:32:24S	4924623	712.83	96845.01	91267.10	87181.37	87321.53	0.00	644707	26138	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	00:34:02S	4924624	375.80	97095.33	91704.02	87289.35	87634.22	0.00	644746	26140	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	00:35:19S	4924625	115.26	97385.10	91734.22	87881.32	88306.90	0.00	644770	26153	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	00:38:57S	4924626	36.84	97807.68	92060.46	88341.84	88583.05	0.00	644834	26158	Bob's Bar	Helena	470092	705352	700073242186
Logic Accessed	01/20/2008	00:39:30S			98222.43	92077.72	88431.83	89148.14	0.00	644916	26177	Bob's Bar	Helena	470092	705352	700073242186
Manual Request	01/20/2008	00:41:38S			98732.88	92667.08	88926.05	89244.94	0.00	644980	26180	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	01:46:52S	4924627	602.57	98894.26	93222.11	89692.77	90040.55	0.00	645054	26190	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	02:58:13S	4924628	128.21	99410.30	93981.63	89707.54	90107.08	0.00	645146	26197	Bob's Bar	Helena	470092	705352	700073242186
Before Memory Clear	01/20/2008	03:10:19S			99433.12	94017.49	89879.32	90815.96	0.00	645177	26203	Bob's Bar	Helena	470092	705352	700073242186
After Memory Clear	01/20/2008	03:10:19S			99433.12	94017.49	89879.32	90815.96	0.00	645177	26203	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	03:11:45S	4924629	752.65	99490.50	94714.44	90097.87	91521.82	0.00	645223	26214	Bob's Bar	Helena	470092	705352	700073242186
Logic Accessed	01/20/2008	04:15:16S			99533.34	95256.77	90205.15	92195.28	0.00	645303	26221	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	04:26:52S	4924630	562.77	100036.61	95353.33	90466.04	92691.16	0.00	645369	26230	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	04:32:56S	4924631	639.73	100114.89	95586.56	90776.02	92930.02	0.00	645447	26249	Bob's Bar	Helena	470092	705352	700073242186
Cash Ticket	01/20/2008	05:34:02S	4924632	549.41	100737.40	95987.51	91345.95	93606.39	0.00	645539	26260	Bob's Bar	Helena	470092	705352	700073242186
Day End	01/20/2008	23:59:59S			100737.40	95987.51	91345.95	93606.39	0.00	645539	26260	Bob's Bar	Helena	470092	705352	700073242186

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progressive_470092_20080125_000000s.txt

Date	Time	Game Name	Type	Denom$	Progressive Name	Amount$	Before $$JP	After $$JP	Before $$ES	After $$ES	$$PD	$$BS	$$MX
01/25/2008	02:13:39S	Wild Widow	Keno	0.05	9 of 9	384.00	384.00	0.00	0.00	0.00	300.00	0.00	800.00
01/25/2008	04:23:16S	Cash Climb	Keno	0.05	7 of 7	637.00	637.00	400.00	0.00	0.00	3900.00	400.00	800.00
01/25/2008	04:24:52S	Classic	Keno	0.25	7 of 7	450.00	450.00	0.00	0.00	0.00	6600.00	0.00	800.00

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Game Name	Type	Denom$	$$PL	$$WN	Progressive Name	$$JP	$$ES	$$PD	$$BS	$$MX
Classic	Keno	0.05	5956.00	1411.00	6 of 6	300.00	0.00	1340.00	200.00	800.00
Classic	Keno	0.05	5956.00	1411.00	7 of 7	794.00	0.00	1175.00	400.00	800.00
Classic	Keno	0.05	5956.00	1411.00	8 of 8	800.00	700.00	815.00	800.00	800.00
Classic	Keno	0.05	5956.00	1411.00	9 of 9	800.00	600.00	0.00	800.00	800.00
Classic	Keno	0.05	5956.00	1411.00	10 of 10	733.00	0.00	428.00	200.00	800.00
Classic	Keno	0.25	9726.00	8597.00	6 of 6	800.00	200.00	0.00	800.00	800.00
Classic	Keno	0.25	9726.00	8597.00	7 of 7	757.00	0.00	755.00	400.00	800.00
Classic	Keno	0.25	9726.00	8597.00	8 of 8	634.00	0.00	6473.00	600.00	800.00
Classic	Keno	0.25	9726.00	8597.00	9 of 9	800.00	500.00	2140.00	800.00	800.00
Classic	Keno	0.25	9726.00	8597.00	10 of 10	731.00	0.00	801.00	600.00	800.00
Redneck	Keno	0.05	6687.00	327.00	6 of 6	800.00	300.00	0.00	800.00	800.00
Redneck	Keno	0.05	6687.00	327.00	7 of 7	800.00	900.00	0.00	800.00	800.00
Redneck	Keno	0.05	6687.00	327.00	8 of 8	800.00	200.00	0.00	800.00	800.00
Redneck	Keno	0.05	6687.00	327.00	9 of 9	496.00	0.00	0.00	400.00	800.00
Redneck	Keno	0.05	6687.00	327.00	10 of 10	692.00	0.00	0.00	600.00	800.00
Redneck	Keno	0.25	4922.00	4232.00	6 of 6	312.00	0.00	380.00	200.00	800.00
Redneck	Keno	0.25	4922.00	4232.00	7 of 7	742.00	0.00	2990.00	600.00	800.00
Redneck	Keno	0.25	4922.00	4232.00	8 of 8	649.00	0.00	3579.00	400.00	800.00
Redneck	Keno	0.25	4922.00	4232.00	9 of 9	753.00	0.00	1966.00	600.00	800.00
Redneck	Keno	0.25	4922.00	4232.00	10 of 10	800.00	200.00	1665.00	800.00	800.00
Firepower	Keno	0.05	3473.00	1958.00						
Firepower	Keno	0.25	7205.00	1514.00						
Hot and Hotter	Keno	0.05	2264.00	289.00	6 of 6	800.00	900.00	0.00	800.00	800.00
Hot and Hotter	Keno	0.05	2264.00	289.00	7 of 7	631.00	0.00	0.00	600.00	800.00
Hot and Hotter	Keno	0.05	2264.00	289.00	8 of 8	526.00	0.00	0.00	400.00	800.00
Hot and Hotter	Keno	0.05	2264.00	289.00	9 of 9	223.00	0.00	0.00	200.00	800.00
Hot and Hotter	Keno	0.05	2264.00	289.00	10 of 10	772.00	0.00	0.00	600.00	800.00
Hot and Hotter	Keno	0.25	4311.00	3321.00	6 of 6	700.00	0.00	1475.00	600.00	800.00
Hot and Hotter	Keno	0.25	4311.00	3321.00	7 of 7	800.00	500.00	0.00	800.00	800.00
Hot and Hotter	Keno	0.25	4311.00	3321.00	8 of 8	800.00	0.00	2743.00	800.00	800.00
Hot and Hotter	Keno	0.25	4311.00	3321.00	9 of 9	793.00	0.00	1231.00	400.00	800.00
Hot and Hotter	Keno	0.25	4311.00	3321.00	10 of 10	250.00	0.00	2724.00	200.00	800.00
Lucky Bells	Keno	0.05	4401.00	1878.00	6 of 6	652.00	0.00	1569.00	400.00	800.00
Lucky Bells	Keno	0.05	4401.00	1878.00	7 of 7	516.00	0.00	1447.00	200.00	800.00
Lucky Bells	Keno	0.05	4401.00	1878.00	8 of 8	442.00	0.00	1130.00	400.00	800.00
Lucky Bells	Keno	0.05	4401.00	1878.00	9 of 9	779.00	0.00	1165.00	600.00	800.00
Lucky Bells	Keno	0.05	4401.00	1878.00	10 of 10	741.00	0.00	1200.00	600.00	800.00
Lucky Bells	Keno	0.25	4275.00	559.00	6 of 6	800.00	500.00	0.00	800.00	800.00
Lucky Bells	Keno	0.25	4275.00	559.00	7 of 7	689.00	0.00	0.00	600.00	800.00
Lucky Bells	Keno	0.25	4275.00	559.00	8 of 8	800.00	200.00	0.00	800.00	800.00
Lucky Bells	Keno	0.25	4275.00	559.00	9 of 9	800.00	900.00	0.00	800.00	800.00
Lucky Bells	Keno	0.25	4275.00	559.00	10 of 10	310.00	0.00	260.00	200.00	800.00
Tic Tac Toe	Keno	0.05	3287.00	2674.00	6 of 6	274.00	0.00	1938.00	200.00	800.00
Tic Tac Toe	Keno	0.05	3287.00	2674.00	7 of 7	409.00	0.00	0.00	400.00	800.00
Tic Tac Toe	Keno	0.05	3287.00	2674.00	8 of 8	775.00	0.00	1587.00	600.00	800.00
Tic Tac Toe	Keno	0.05	3287.00	2674.00	9 of 9	774.00	0.00	0.00	200.00	800.00
Tic Tac Toe	Keno	0.05	3287.00	2674.00	10 of 10	271.00	0.00	958.00	200.00	800.00
Tic Tac Toe	Keno	0.25	8827.00	8450.00	6 of 6	541.00	0.00	5919.00	200.00	800.00
Tic Tac Toe	Keno	0.25	8827.00	8450.00	7 of 7	681.00	0.00	2771.00	600.00	800.00
Tic Tac Toe	Keno	0.25	8827.00	8450.00	8 of 8	617.00	0.00	1583.00	400.00	800.00
Tic Tac Toe	Keno	0.25	8827.00	8450.00	9 of 9	563.00	0.00	1982.00	200.00	800.00
Tic Tac Toe	Keno	0.25	8827.00	8450.00	10 of 10	800.00	800.00	8179.00	800.00	800.00
Wild Widow	Keno	0.05	1921.00	505.00	6 of 6	613.00	0.00	0.00	600.00	800.00
Wild Widow	Keno	0.05	1921.00	505.00	7 of 7	642.00	0.00	202.00	200.00	800.00
Wild Widow	Keno	0.05	1921.00	505.00	8 of 8	800.00	300.00	0.00	800.00	800.00
Wild Widow	Keno	0.05	1921.00	505.00	9 of 9	325.00	0.00	278.00	200.00	800.00
Wild Widow	Keno	0.05	1921.00	505.00	10 of 10	800.00	700.00	0.00	800.00	800.00
Wild Widow	Keno	0.25	995.00	285.00	6 of 6	666.00	0.00	0.00	400.00	800.00
Wild Widow	Keno	0.25	995.00	285.00	7 of 7	618.00	0.00	0.00	400.00	800.00
Wild Widow	Keno	0.25	995.00	285.00	8 of 8	798.00	0.00	0.00	200.00	800.00
Wild Widow	Keno	0.25	995.00	285.00	9 of 9	787.00	0.00	0.00	600.00	800.00
Wild Widow	Keno	0.25	995.00	285.00	10 of 10	799.00	0.00	0.00	600.00	800.00
Cash Climb	Keno	0.05	9591.00	6453.00	6 of 6	687.00	0.00	2034.00	600.00	800.00
Cash Climb	Keno	0.05	9591.00	6453.00	7 of 7	606.00	0.00	1690.00	400.00	800.00
Cash Climb	Keno	0.05	9591.00	6453.00	8 of 8	783.00	0.00	1552.00	600.00	800.00
Cash Climb	Keno	0.05	9591.00	6453.00	9 of 9	240.00	0.00	2257.00	200.00	800.00
Cash Climb	Keno	0.05	9591.00	6453.00	10 of 10	800.00	900.00	3602.00	800.00	800.00
Cash Climb	Keno	0.25	1912.00	1340.00	6 of 6	800.00	500.00	0.00	800.00	800.00
Cash Climb	Keno	0.25	1912.00	1340.00	7 of 7	800.00	800.00	0.00	800.00	800.00
Cash Climb	Keno	0.25	1912.00	1340.00	8 of 8	693.00	0.00	1135.00	200.00	800.00
Cash Climb	Keno	0.25	1912.00	1340.00	9 of 9	749.00	0.00	0.00	400.00	800.00
Cash Climb	Keno	0.25	1912.00	1340.00	10 of 10	659.00	0.00	0.00	600.00	800.00
Money Aces	Poker	0.25	2078.00	417.00						
Dueces Wild	Poker	0.25	1901.00	1048.00						
Progressive Madness	Poker	0.25	2778.00	2144.00	5 of Kind	740.00	0.00	2137.00	400.00	800.00
Progressive Madness	Poker	0.25	2778.00	2144.00	Straight Flush	361.00	0.00	1992.00	200.00	800.00
Progressive Madness	Poker	0.25	2778.00	2144.00	4 Aces	651.00	0.00	808.00	200.00	800.00
Aces Wild	Poker	0.25	428.00	403.00						
Fever	Poker	0.25	4780.00	4259.00						
Cat Fish	Poker	0.25	9210.00	4985.00						
Triple	Bingo	0.05	4980.00	4130.00						
Triple	Bingo	0.25	7693.00	246.00						
Word	Bingo	0.05	8437.00	4793.00						
Word	Bingo	0.25	5403.00	4400.00						
Card of Day	Bonus			346.00						
Mystery	Bonus			4993.00						

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